

FIG. 1A

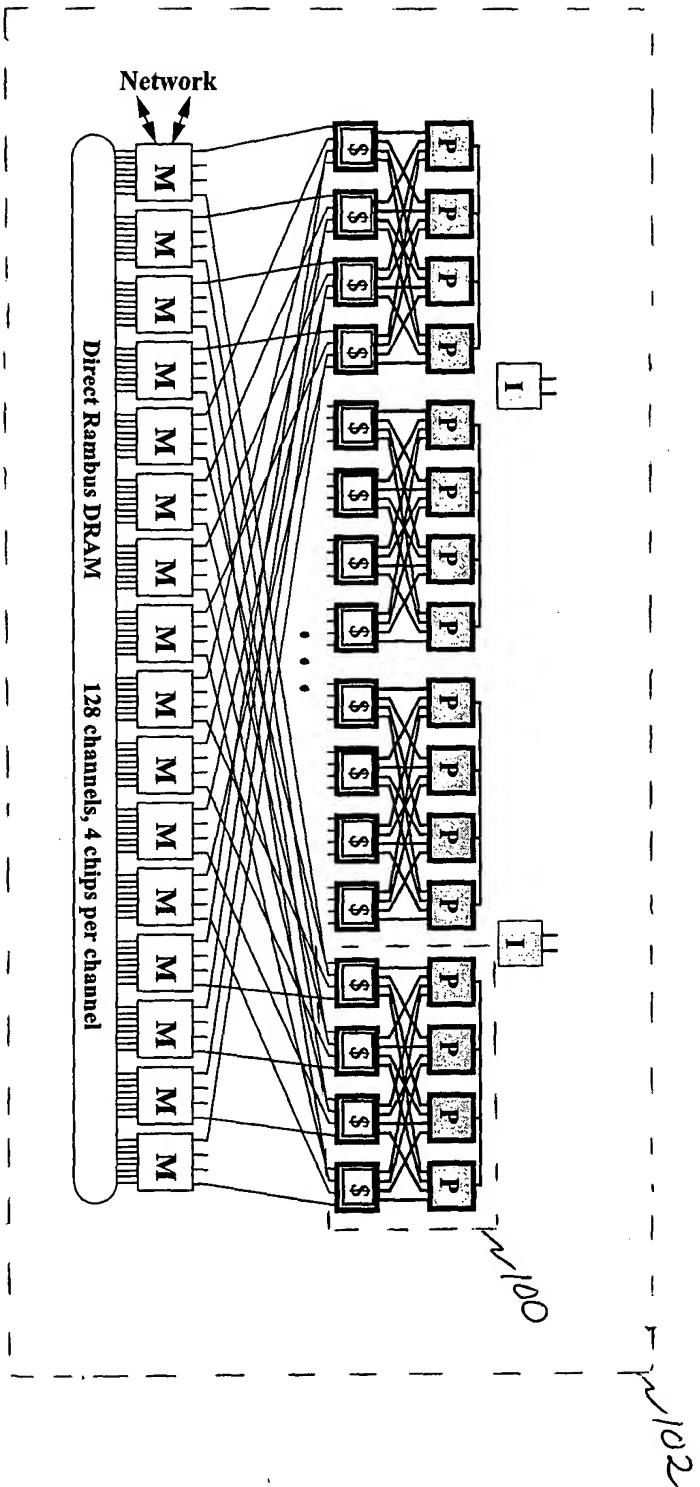


FIG. 1B

Physical address format

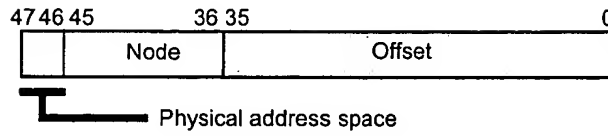


FIG. 2A

Physical Address Map

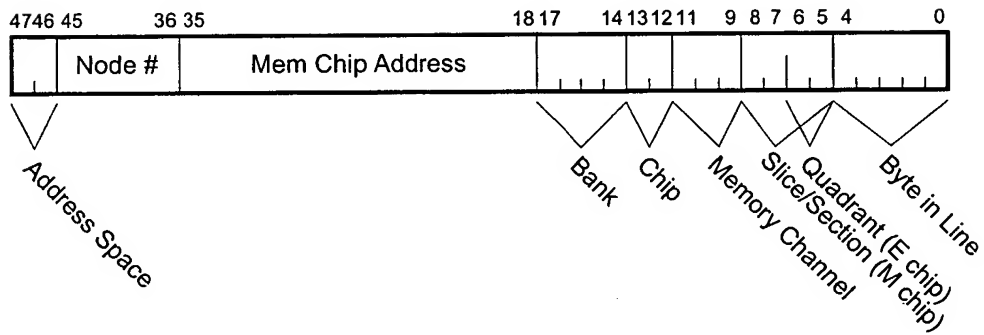


FIG. 2B

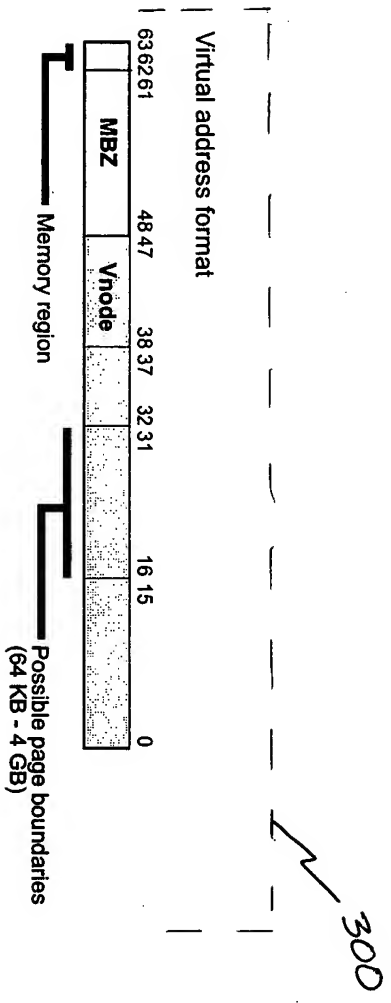


FIG. 3

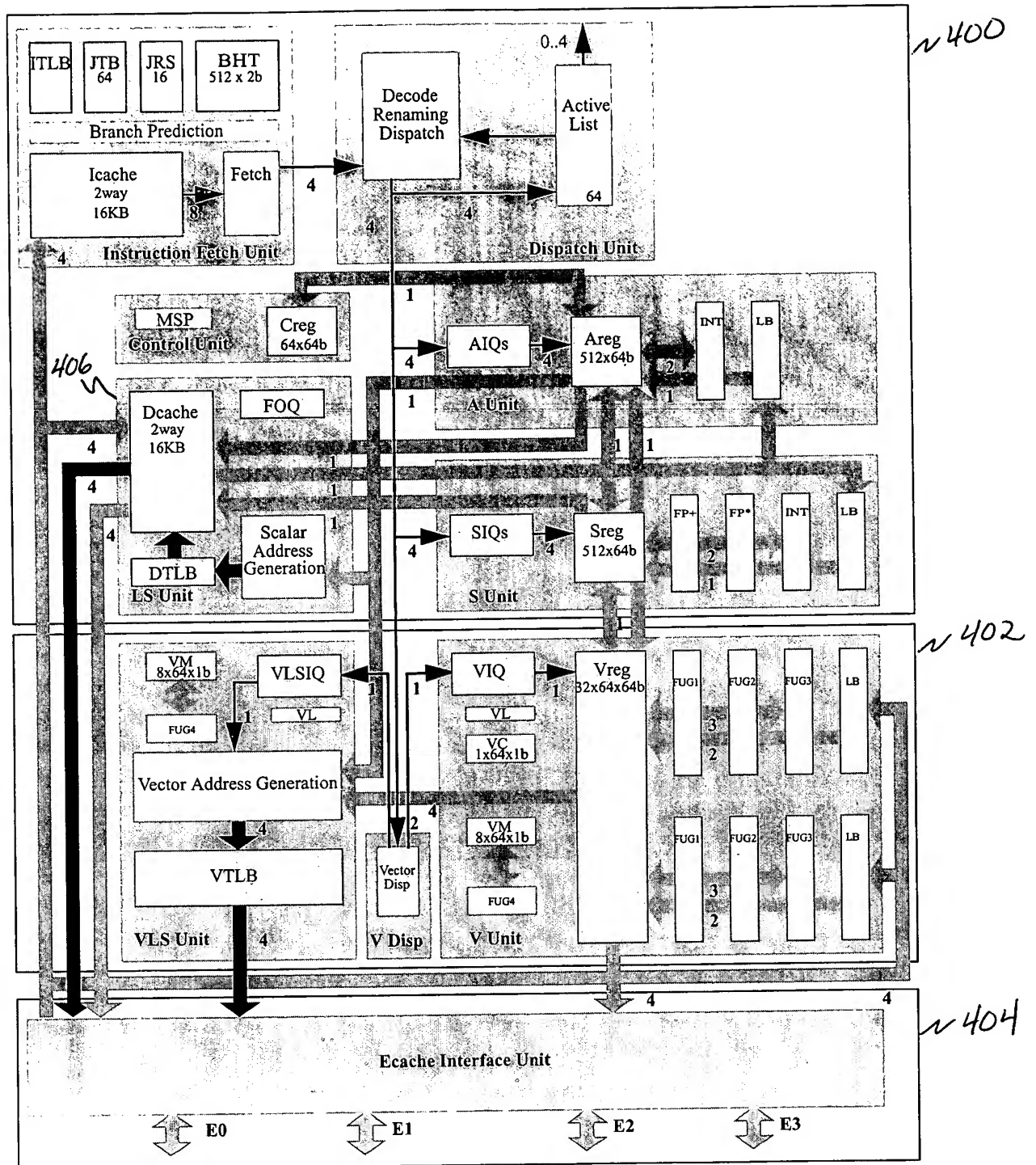


FIG. 4A

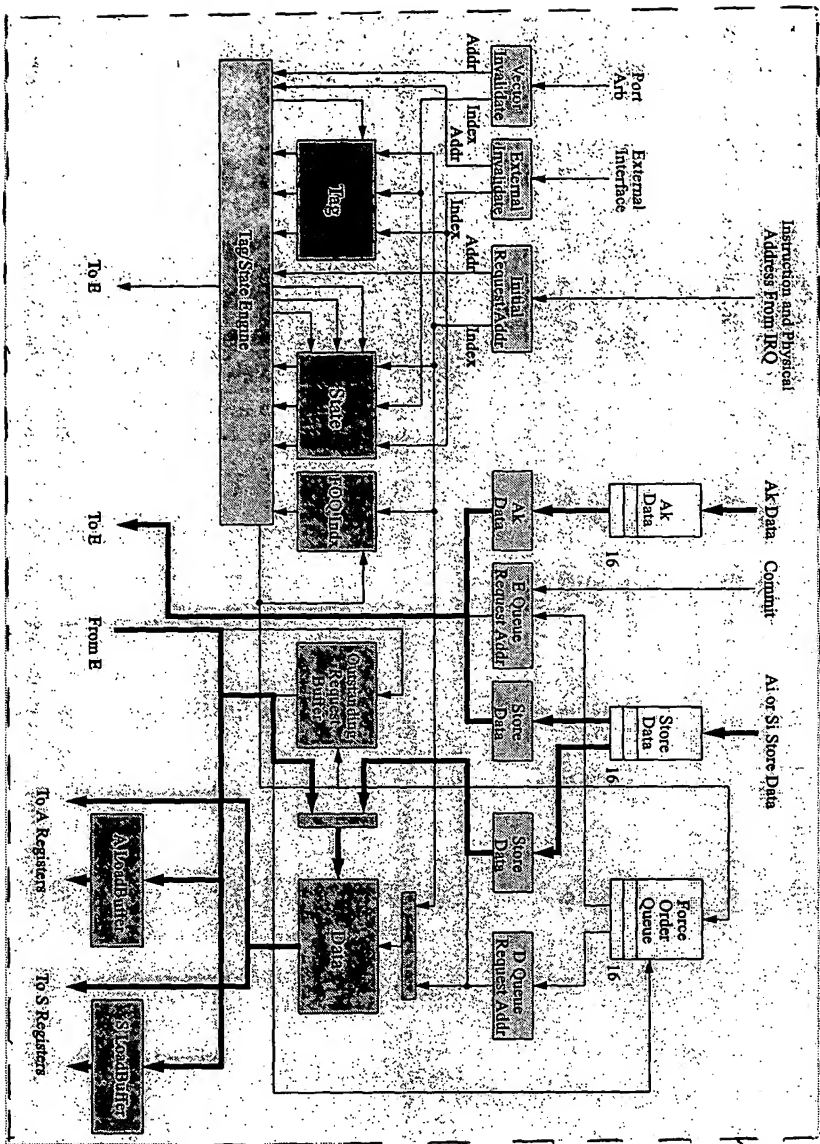


FIG. 4C

~410

Dcache Bypass	Initial Request	Tag & State	FOQ Index	Action								
			Match	Msg to E	D\$	FOQ entry	E	D	P	Allocate	ORB Entry	Other
No	Read	Miss	No	Read		Dummy		x	x	LRU Way	Read	
			Yes			ReadUC	x				Read nc†	
		Hit	No		Read							
			Yes†			Read		x				
	ReadShared	Miss	No	ReadShared		Dummy		x	x	LRU Way	Read	
			Yes			ReadUC- Shared	x				Read nc	
		Hit	No		Read							
			Yes††			Read		x				
	ReadNA	Miss	No	ReadNA							Read nc	
			Yes			ReadNA	x				Read nc	
		Hit	No		Read							
			Yes			Read		x				
	Write	Miss	No	ReadMod		SWrite	x	x	x	LRU Way	Read	
			Yes			SWrite	x					
		Hit	No			SWrite	x	x				
			Yes									
	WriteNA	Miss	No			SWriteNA	x					
			Yes									
		Hit	No			SWrite	x	x				
			Yes									
	Prefetch (to discard)	Miss	No									Discard
			Yes									
		Hit	No									
			Yes									

FIG. 4D

Dcache Bypass	Initial Request	Tag & State	FOQ Index Match	Action									ORB Entry	Other						
				Msg to E	D\$	FOQ entry	E	D	P	Allocate										
Yes	Read	Miss	No			ReadUC	x					Read nc								
			Yes											Invalidate						
		Hit	No																	
			Yes																	
	ReadShared	Miss	No			ReadUC-Shared	x					Read nc								
			Yes											Invalidate						
		Hit	No																	
			Yes																	
	ReadNA	Miss	No			ReadNA	x					Read nc								
			Yes											Invalidate						
		Hit	No																	
			Yes																	
	Write	Miss	No			SWrite	x													
			Yes																	
		Hit	No																	
			Yes																	
	WriteNA	Miss	No			SWriteNA	x													
			Yes																	
		Hit	No																	
			Yes																	
	Prefetch (to discard)	Miss	No											Discard						
			Yes																	
		Hit	No																	
			Yes																	
	IORead					ReadNA to IO space	x					Read nc								
	IOWrite					SWriteNA to IO space	x													
	afadd ††					afadd (1 dw)	x					Read nc								
	afax					afax (2 dw)	x					Read nc								
	acswap					acswap (2 dw)	x					Read nc								
	aadd					aadd (1 dw)	x													
	aax					aax (2 dw)	x													
	Lsync_s_v					Lsync_s_v	x													
	Lsync_v_s					Lsync_v_s	x						Hold IRQ							
	Msync					Msync	x						Bypass Mode On							
	Msync P					Msync	x													
	Msync V																			
	Gsync					Gsync	x													

†A "Read nc" ORB entry specifies that the returning data will not be cached. Both ReadNA and ReadUC requests use "Read nc" ORB entries. (A ReadNA tells the Ecache not to allocate the line. A ReadUC tells the Ecache that the *P* chip will not be caching the line but the Ecache still should.)

†Do more sophisticated match here (require pending or word match)

††Do more sophisticated match here (require pending or word match)

††These five packet types are AMOs. The FOQ column indicates how many dwords of data accompany the request. Three of the AMOs return data, and two do not.

FIG. 4E